Part 9 · Spot the Mistake

Each solution below reaches a wrong answer, and exactly one step is to blame. Find the first wrong step and rewrite it correctly. Marking other people's work is the fastest way to stop making their mistakes.

□ Spot the Mistake

Area of a sector of angle 90°, radius 7 cm

Step 1. Area ¿ $\frac{90}{360} \times \pi r^2$.

Step 2. ¿ $\frac{1}{4} \times \frac{22}{7} \times 7^2 = \frac{1}{4} \times 154 = 38.5$ cm□^{2}.

Step 3. Since the angle is 90°, the answer should be halved again, giving 19.25 cm□^{2}.

_____ The first wrong step is Step _____ . What should it say?

_____

□ Spot the Mistake

Area of the segment for a 60° chord, radius 21 cm (π = 22/7)

Step 1. Area of sector ¿ $\frac{60}{360} \times \frac{22}{7} \times 21^2 = 231$ cm□^{2}.

Step 2. The chord and two radii form an equilateral triangle, area ¿ $\frac{\sqrt{3}}{4} r^2$.

Step 3. Area of segment ¿ sector area + ¿ triangle area ¿ $231 + 190.7 = 421.7$ cm□^{2}.

_____ The first wrong step is Step _____ . What should it say?

_____

□ Spot the Mistake

Area of the ring between two circles of radii 14 cm and 7 cm (π = 22/7)

Step 1. Area of ring ¿ $\pi R^2 - \pi r^2$.

Step 2. ¿ $\frac{22}{7} \times 14^2 - \frac{22}{7} \times 7^2$

Step 3. ¿ $\frac{22}{7} \times$ ¿ cm□^{2}.

_____ The first wrong step is Step _____ . What should it say?

_____

Every pizza slice, brooch, umbrella panel and racetrack in this chapter is just a fraction of a circle — find the angle, apply the fraction, and the area follows. □□